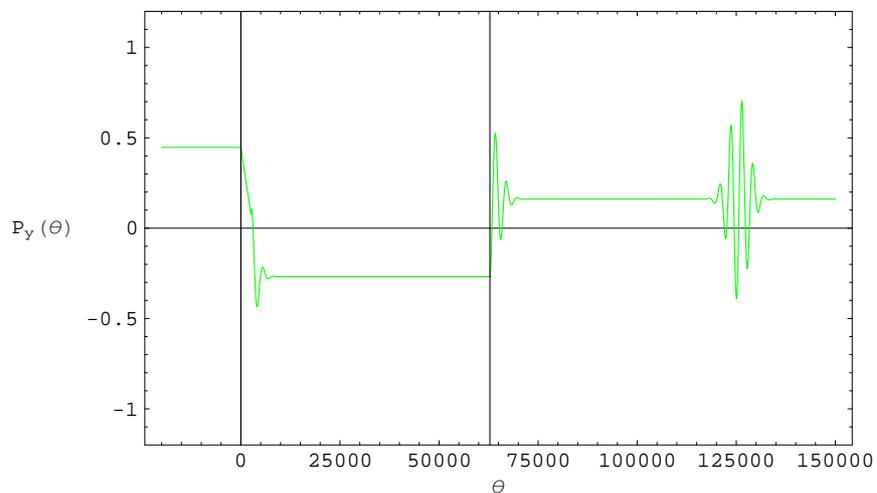


Case 4: Echo case



$\theta = 2\pi \times \text{turn number}$.

Spin tune nominal = 4.6.

Spin tune jumps at $\theta = 0$ from 0.599 to 0.601, and jumps at $\theta = 2\pi \times 10000$ from 0.601 to 0.599. Two vertical lines are the two jumps.

Resonance strength $|\epsilon| = 0.002$.

Green is polarization of a beam with Gaussian energy distribution with $\sigma_E/E = 0.0002$. Spin echo occurs at $\theta = 4\pi \times 10000$.

Note: The time between the two jumps (taken to be 10000 turns here) can be arbitrarily increased to dramatize the echo phenomenon. For example, take 1000000 turns.